CLAIMS

1. An electroabsorption modulator (EAM), comprising a first EAM section optically coupled to a second EAM section, a transition wavelength in the electroabsorption (EA) spectrum of the first EAM section, at which absorption changes substantially, being different to a transition wavelength in the EA spectrum of the second EAM section, wherein the first EAM section and second EAM section are driven by separate radio frequency (RF) signals.

2. An EAM according to claim 1, wherein the separate radio frequency (RF) signals are generated in dependence on a common modulating RF signal and have a phase difference between them.

3. An EAM according to claim 2, wherein the phase difference is substantially 180° such that the first EAM section and second EAM section are driven in anti-phase in dependence on the common modulating RF signal.

4. An EAM according to claim 1, wherein the separate radio frequency (RF) signals are generated in dependence on two respective independent modulating RF signals and have a phase difference between them.

5. An EAM according to claim 4, wherein the phase difference is substantially 180° such that the first EAM section and second EAM section are driven in anti-phase in dependence on the respective independent modulating RF signals.

6. An EAM according to claims 2 to 5, wherein the amplitudes of the RF signals driving each of the first EAM and second EAM sections are controlled independently.

7. An EAM according to any of the preceding claims, wherein one of the first EAM and second EAM sections is substantially transparent at a wavelength at which the other of the first EAM and second EAM sections is substantially electroabsorptive.

8. An EAM according to any of the preceding claims, wherein the sign and magnitude of phase modulation imparted to an optical signal propagating through the EAM is determined by the lengths of the first EAM and second EAM sections.

9. An EAM according to claim 8, wherein the sign and magnitude of the phase

modulation imparted to the optical signal is further determined by the amplitudes of the RF signals driving each of the first EAM and second EAM sections.

10. An EAM according to claim 9, wherein the amplitudes of the RF signals driving the first EAM and second EAM sections are determined in dependence on an optical device monitoring the phase modulation imparted to the optical signal.

11. An EAM according to any of the preceding claims, wherein the first EAM and second EAM sections are integrated on a common substrate.

12. An EAM according to any of the preceding claims, wherein at least one of the first EAM and second EAM sections comprises a multiple quantum well (MQW) structure.

13. An EAM according to any of the preceding claims, wherein each of the first EAM and second EAM sections comprise a travelling wave EAM (TW-EAM).

14. An optical device for optical time division multiplexing comprising an EAM according to any of the preceding claims.